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### INTRODUCTION.

This REVIEW is based on reports for June, 1890, from 2,365 regular and voluntary observers. These reports are classified as follows: 171 reports from Signal Service stations; 127 reports from United States Army post surgeons; 15 reports of rainfall observations of the United States Geological Survey in Arizona and New Mexico; 1,464 monthly reports from state weather service and voluntary observers; 24 reports from Canadian stations; 175 reports through the Central Pacific Railway Company; 389 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports

through the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, The Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Meteorological Report of the Missouri State Board of Agriculture, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Texas, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

### CHARACTERISTICS OF THE WEATHER FOR JUNE, 1890.

The month was cooler than the average June in New England, the Saint Lawrence Valley, and the Canadian Maritime Provinces, and from the eastern slope of the Rocky Mountains and the west Gulf states westward, save at stations on the immediate Pacific coast between San Francisco, Cal., and the mouth of the Columbia River. Over a greater portion of the country lying east of the Rocky Mountains the month was warmer than usual. At stations in the south Atlantic states, Arkansas, Kansas, the Ohio Valley and Tennessee, the Lake region, the upper Mississippi and Red River of the North valleys the mean temperature was the highest, and at stations in the northern plateau region and on the north Pacific coast the mean temperature was the lowest reported for June during the respective periods of observation. The highest temperature reported was 120°, at Collyer, Kans., on the 21st, and the lowest temperature reported was 12°, at Breckenridge, Colo., on the 6th. At stations in North Carolina, Georgia, central Texas, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Illinois, Missouri, Nebraska, Kansas, and southern California the maximum temperature was as high or higher, and at stations in the lower Rio Grande valley, central Colorado, extreme northwestern Washington, and in the Sacramento Valley, California, the minimum temperature was as low or lower than previously reported for June. Frost injurious to vegetation was reported in southeastern Idaho on the 3d, 12th, and 13th; in central Utah on the 4th; in eastern Colorado from the 4th to 9th; in northern New York, several sections of Michigan, and east-central Arizona on the 8th; in southeastern Wyoming on the 14th; and in west-central Wyoming on the 16th.

The heaviest precipitation was reported in northeastern Iowa, where it exceeded sixteen inches, and the monthly precipitation exceeded ten inches on the west-central coast of Florida, in northern Illinois, south-central Indiana, northern and western Iowa, southern and central Louisiana, in adjoining parts of North Dakota and South Dakota, and in northeastern Wisconsin. Over a greater part of the southern half of California and thence eastward over the Colorado and lower Gila valleys no precipitation was reported. The greatest

excesses in precipitation occurred in the extreme northwest, where nearly double the usual amount fell, and on the north Pacific coast and in the west Gulf states, where the monthly precipitation was about one-fourth greater than the average amount for June. On the south and middle Pacific coasts, on the southeastern slope of the Rocky Mountains, and over the middle and southern plateau regions less than one-fourth, and in the south Atlantic states and on the middle-eastern slope of the Rocky Mountains less than one-half the usual amount of precipitation for June fell. At stations in Kentucky, Indiana, Iowa, Wisconsin, South Dakota, North Dakota, and Washington the precipitation was the heaviest, and at stations in North Carolina, South Carolina, Georgia, Florida, Arkansas, Tennessee, Illinois, Colorado, Kansas, central Texas, Arizona, middle and southern California it was the least ever reported for June. Measurable snowfall was reported only in central Colorado and east-central and north-central Nevada, the greatest depth, 4.8 inches, being noted at La Veta, Colo., and trace of snowfall was reported in northern New Hampshire and southern Wyoming.

Well-defined tornadoes were reported in Nebraska on the 3d, in Iowa on the 4th, in Illinois on the 10th and 14th, in Kansas and Nebraska on the 16th, in South Dakota on the 17th, in South Carolina on the 19th, in Illinois on the 20th, in Nebraska on the 22d, and in Wisconsin on the 27th. Severe thunderstorms, resulting in damage by lightning, rain, or hail, were reported east of the Rocky Mountains on twenty-two dates; the storms were confined principally to the lower Missouri, upper Mississippi, and Ohio valleys, and the Lake region, and were reported most frequently in Iowa and Michigan.

The lower Mississippi River fell below the danger-line at New Orleans, La., on the 12th, and continued to fall slowly during the month. Floods were reported along the Carson River, in Nevada, as a result of melting snow in the Sierra Nevada Mountains, and disastrous floods, caused by heavy rain, occurred in Ontario, Can., central New York, northern Illinois, and southern Wisconsin. Drought injured crops and vegetation in areas in the south Atlantic and Gulf states, and in the lower Missouri valley.